Attorney Docket No.: AM-9230 U.S. Express Mail No.: EV 611361562 US

IN THE CLAIMS:

Please amend Claims 4 and 22 as follows.

1. (Original) A method of PECVD depositing an a-SiN $_x$:H dielectric film useful in a TFT device as gate dielectric, when a series of TFT devices are arrayed over a substrate having a surface area larger than about 1 m 2 , said method comprising:

depositing said a-SiN $_{\rm x}$:H dielectric film over a substrate which is at a temperature ranging from about 120 °C to about 340 °C;

depositing said a- SiN_x : H dielectric film at a process pressure which ranges between about 1.0 Torr to about 2.0 Torr;

depositing said a-SiN_x: H dielectric film from precursors including N₂, NH₃, and SiH4, and wherein a component ratio of NH₃/SiH₄ ranges from about 5.3 to about 10.0, a component ratio of N₂/SiH₄ ranges from about 5.5 to about 18.7, and a component ratio of N₂/NH₃ ranges from about 0.6 to about 2.3; and

applying a plasma to a mixture of said precursors, so that the plasma density in a process chamber in which said a-SiN_x: H dielectric film is deposited ranges between about $0.2~\mathrm{W/cm^2}$ and about $0.6~\mathrm{W/cm^2}$.

2. (Original) A method in accordance with Claim 1, wherein an electrode spacing in said process chamber ranges from about 400 mils to about 1000 mils.

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3. (Original) A method in accordance with Claim 1 or Claim 2, wherein said substrate temperature ranges from about 240 °C to about 320 °C.

- 4. (Currently Amended) A method in accordance with Claim 1 or Claim 2, wherein said pressure in said process chamber is less than ranges from about 1.0 Torr to about 1.5 Torr.
- 5. (Original) A method in accordance with Claim 1, wherein said substrate surface area is larger than about 2.7 m².
- 6. (Original) A method in accordance with Claim 5, wherein said substrate surface area is larger than about 4.1 m².
- 7. (Original) A method in accordance with Claim 6, wherein said substrate surface area is larger than about 9.0 m².
- 8. (Original) A method in accordance with Claim 1, wherein said substrate surface area ranges between about 1.0 m² and about 4.1 m².
- 9. (Original) A method in accordance with Claim 1, wherein a deposition rate of said a-SiN_x: H dielectric film is at least 1000 Å/min.

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10. (Original) A method in accordance with Claim 9, wherein said deposition rate is at least 1300 Å/min.

- 11. (Original) A method in accordance with Claim 10, wherein said deposition rate is at least 1,600 Å/min.
- 12. (Original) A method in accordance with Claim 11, wherein said deposition rate is at least 2300 Å/min.
- 13. (Original) A method in accordance with Claim 12, wherein said deposition rate is at least 3000 Å/min.
- 14. (Original) A method in accordance with Claim 1, wherein a deposition rate of said a-SiN_x: H dielectric film ranges between about 1000 Å/min and 2300 Å/min.
- 15. (Original) A method in accordance with Claim 1, wherein the variation in said film thickness over said substrate is less than about 16 %.
- 16. (Original) A method in accordance with Claim 1, or Claim 15, wherein the atomic % of Si-H bonded structure is less than about 20 %.

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17. (Original) A method in accordance with Claim 16, wherein the atomic % of Si-H bonded structure is less than about 15 %.

- 18. (Original) A method in accordance with Claim 1, wherein a wet etch rate of said film in a solution of 7 % by weight hydrofluoric acid, 34 % by weight ammonium fluoride, and 59 % by weight water at a temperature of about 25 °C is less than 800 Å/min.
- 19. (Original) A method of PECVD depositing an a-SiN_x: H dielectric film useful in a TFT device as a passivation dielectric, when a series of TFT devices are arrayed over a substrate having a surface area larger than about 1m², said method comprising:

depositing said a-SiN $_x$:H dielectric film over a substrate which is at a temperature ranging from about 120 °C to about 340 °C;

depositing said a- SiN_x : H dielectric film at a process pressure which ranges between about 1.0 Torr to about 2.0 Torr;

depositing said a-SiN_x: H dielectric film from precursors including N₂, NH₃, and SiH4, and wherein a component ratio of NH₃/SiH₄ ranges from about 5.3 to about 11.1, a component ratio of N₂/SiH₄ ranges from about 5.8 to about 20.8 and a component ratio of N₂/NH₃ ranges from about 0.5 to about 3.9; and

applying a plasma to a mixture of said precursors, so that the plasma density in a process chamber in which said a- SiN_x : H dielectric film is deposited ranges between about 0.2 W/cm² and about 0.6 W/cm².

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20. (Original) A method in accordance with Claim 19, wherein an electrode spacing in said process chamber ranges from about 400 mils to about 1000 mils.

- 21. (Original) A method in accordance with Claim 19 or Claim 20, wherein said substrate temperature ranges from about 240 °C to about 320 °C.
- 22. (Currently Amended) A method in accordance with Claim 19 or Claim 20, wherein said pressure in said process chamber is less than ranges from about 1.0 Torr to about 1.5 Torr.
- 23. (Original) A method of PECVD depositing an a-SiN $_x$: H dielectric film useful in a TFT device as a passivation dielectric, when a series of TFT devices are arrayed over a substrate having a surface area larger than about $1m^2$, said method comprising:

depositing said a-SiN $_x$:H dielectric film over a substrate which is at a temperature ranging from about 120 °C to about 340 °C;

depositing said a- SiN_x : H dielectric film at a process pressure which ranges between about 1.0 Torr to about 2.0 Torr;

depositing said a-SiN_x: H dielectric film from precursors including N₂, NH₃, and SiH4, and wherein a component ratio of NH₃/SiH₄ ranges from about 5.0 to about 8.0, a component ratio of N₂/SiH₄ ranges from about 5.0 to about 6.0 and a component ratio of N₂/NH₃ ranges from about 0.6 to about 1.2; and

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applying a plasma to a mixture of said precursors, so that the plasma density in a process chamber in which said a-SiN $_{\rm x}$:H dielectric film is deposited ranges between about 0.2 W/cm 2 and about 0.6 W/cm 2 .